LIET - Light-Aided Information Encoding & Transmission

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Introduction

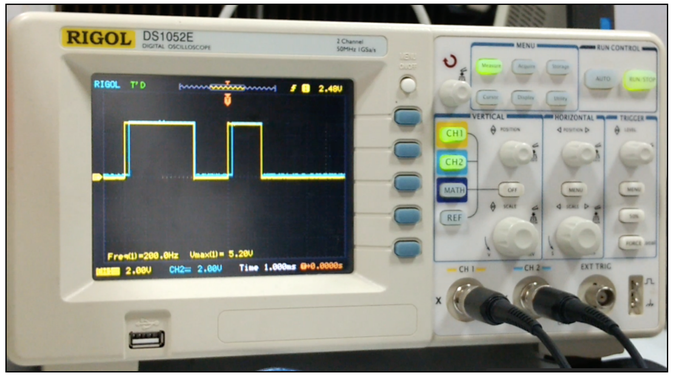
Explore the possibility of transmitting encoded data using light and achieve Optical Wireless Communication. Leverage the much wider bandwidth possible with visible light communication and solve two fundamental needs simultaneously; Illumination and Communication.

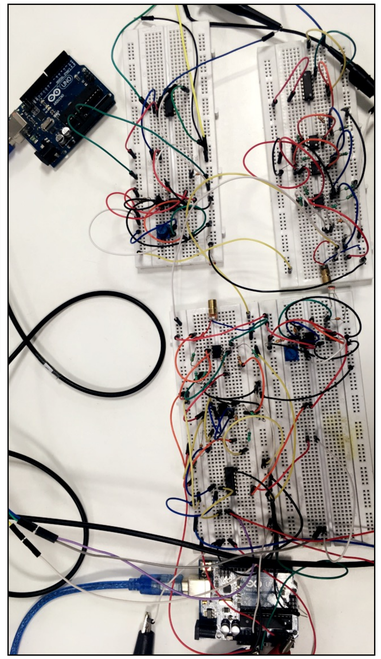
Materials and methods

Data from the USB is converted to serial using the chip CH340G. Using laser, we are transmitting signal with a baud rate of 600. In the other end, we receive the signal by 555 timer in monostable mode triggered by LDR.

BC547 Transistor
7404 NOT Gate
741 Op-Amp

Results





Code: https://github.com/zeroby0/LIET
Video: https://drive.google.com/open?id=0Bx1TITnG0OAYdnBlX2o4QVFvbHM

Conclusions and future work

This project achieved two-way communication using laser using a custom acknowledgement based protocol.

Instead of laser, we can also use LED or array of LEDS, as laser works on narrow-line of sight, whereas LEDs can used to send data to large distances without much calibration.

In broadcasting purposes, Ultra Sonic Transmitter can be used instead of Lasers.

We can further extend to incorporate wavelength division multiplexing using different colors of lasers to achieve great speeds like about 200MBPS at low costs.

References

1.Lab Pdfs
2. www.allaboutcircuits.com

Acknowledgments

Prof. Madhav Rao
Prof. Chetan Parikh
P. Aswini